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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/072,261	02/07/2002	Nurwati S. Devnani	10010971-1	3312

7590 11/20/2002  
AGILENT TECHNOLOGIES, INC.  
Legal Department, DL429  
Intellectual Property Administration  
P.O. Box 7599  
Loveland, CO 80537-0599

EXAMINER

PATEL, ISHWARBHAI B

ART UNIT PAPER NUMBER

2827

DATE MAILED: 11/20/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/072,261

Applicant(s)

DEVNANI ET AL.

Examiner

Ishwar (I. B.) Patel

Art Unit

2827

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 February 2002 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Drawings*

1. The drawings are objected to because the figures are improperly cross hatched. The cross hatching pattern should be selected from those shown on page 600-81 of the MPEP based on the material of the part. See also 37 CFR 1.84(h)(3) and MPEP 608.02.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description:

(I) Reference numeral 115 not shown in figure 1.

(II) Reference numeral 156 not shown in figure 5.

(III) Figure 2 and 6, are not clear as the conductive area and openings on ground / power layer and the signal trace on signal layer are not matching with the description.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

3. The disclosure is objected to because of the following informalities:

(I) Reference numeral "115", page 5, line 18, is not shown in figure 1. Either it is wrong in the figure or in the specification.

(II) In describing figure 2 and 6, the conductive area 165 and open area 170 are described on power/ground layer 140, but shown on layer 150.

Also, the location of signal trace 155 is shown on power/ground layer 140.

Appropriate correction is required with respective change in corresponding figures.

***Claim Rejections - 35 USC § 112***

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 1-11 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

While applicant may be his or her own lexicographer, a term in a claim may not be given a meaning repugnant to the usual meaning of that term. See *In re Hill*, 161 F.2d 367, 73 USPQ 482 (CCPA 1947). The term "laminate" in claims 1-11 is used by the claim to mean, "a printed circuit board with integrated circuit attached to the board," while the accepted meaning is "to roll or compress into a thin plate and a product made by that process".

***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tanahashi, US Patent No. 6,184,477.

Regarding claim 1, Tanahashi discloses a laminate for interconnecting an integrated circuit chip, which comprises:

a first layer, wherein the first layer comprises an electrically conducting area and multiple open area, wherein open area are interspersed inside an outer perimeter of the electrically conducting area (ground wiring conductor G2 in the form of grid, see figure 1-2, column 8, line 35-55);

a second layer, wherein the second layer is electrically insulating, wherein the second layer overlays the first layer (insulating layer 14, see figure 2); and

a third layer, wherein the third layer comprises multiple electrically conducting traces, wherein the third layer overlays the second layer (signal layer S2, see figure 1 and 2), except at least one of the traces is oriented at other than an orthogonal angle to

each axis of the coordinate system. Though orientation of the traces of Tanahashi is orthogonal, the crux of the invention of Tanahashi is routing the traces in such a way, not to intersect the opening in the ground layer. The actual orientation will depend upon the specific requirement of the system. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide the traces of Tanahashi with the traces oriented other than an orthogonal angle in order to have better routing for the specific assembly of the semiconductor device.

Regarding claim 2, Tanahashi further disclose opening ratio from 5 to 80 percent, which cover the range 10-30 percent (column 15, line 1-37).

Regarding claim 3 and 5, though Tanahashi is not explicitly disclosing the integrated circuit attached to the laminate, the circuit substrate of Tanahashi is designed for reducing the cross talk in the integrated circuit device and be a part of the integrated circuit device (column 3, line 5-15).

Regarding claim 4, though Tanahashi does not disclose any additional substrate attached to the laminate, such multi module circuit boards are known in the art for increasing the component density and better routing the traces. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to attach an additional substrate to the laminate of Tanahashi in order to increase the component and better routing the traces.



Regarding claim 6, Tanahashi further discloses the laminate is a printed circuit board.

Regarding claim 7, Tanahashi further discloses insulating material is epoxy resin (column 15, line 60-67).

Regarding claim 8, Tanahashi further discloses a fourth layer of insulating material (insulating layer 13, see figure 2) and fifth layer with electrical traces (signal layer S1, see figure 2), except at least one of the traces is oriented at other than an orthogonal angle to each axis of the coordinate system. Though orientation of the traces of Tanahashi is orthogonal, the crux of the invention of Tanahashi is routing the traces in such a way, not to intersect the opening in the ground layer. The actual orientation will depend upon the specific requirement of the system. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide the traces of Tanahashi with the traces oriented other than an orthogonal angle in order to have better routing for the specific assembly of the assembly.

Regarding claim 9, Tanahashi further discloses insulating material is epoxy resin (column 15, line 60-67).

Regarding claim 10, Tanahashi further discloses the open areas have a repeating shape and repeating size, see figure 1.

Regarding claim 11, the open areas have a repeating orientation with respect to a Cartesian coordinate system, see figure 1.

### ***Conclusion***

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Shenoy and Hetzel discloses a technique / structure to minimize cross talk in electronic package.

Schaper and Crowder et al., disclose mesh plane for shielding.

Imano et al., disclose device with base having grid pattern.

Heilbronner discloses a high-density package with semiconductor device mounted on a substrate with additional circuit boards.



Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ishwar (I. B.) Patel whose telephone number is (703) 305 2617. The examiner can normally be reached on M-F (6:30 - 4) First Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David L Talbott can be reached on (703) 305 9883. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305 3431 for regular communications and (703) 305 7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308 0956.

ibp  
November 13, 2002

  
ALBERT W. PALADINI  
PRIMARY EXAMINER